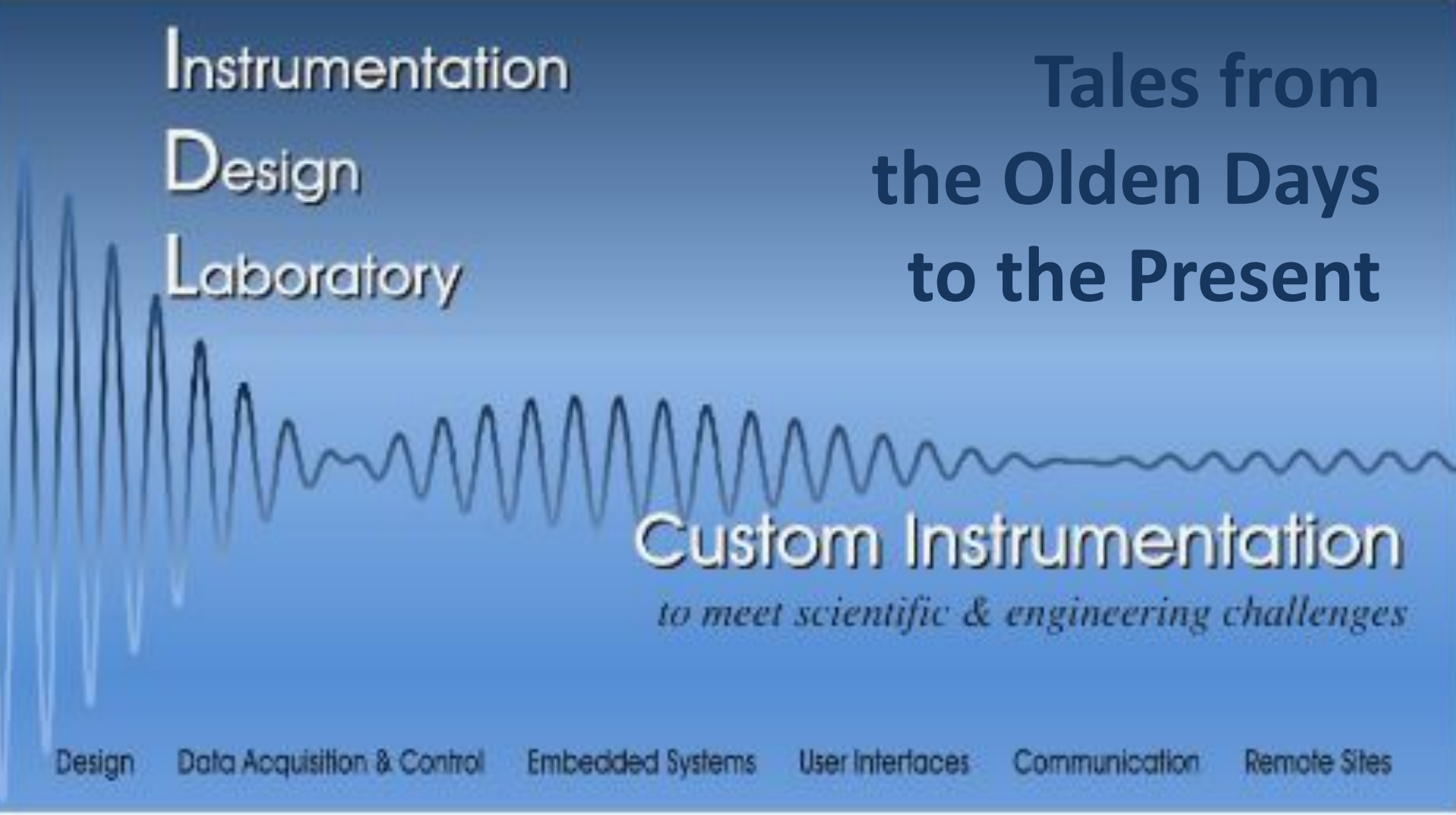

Ken Ratzlaff

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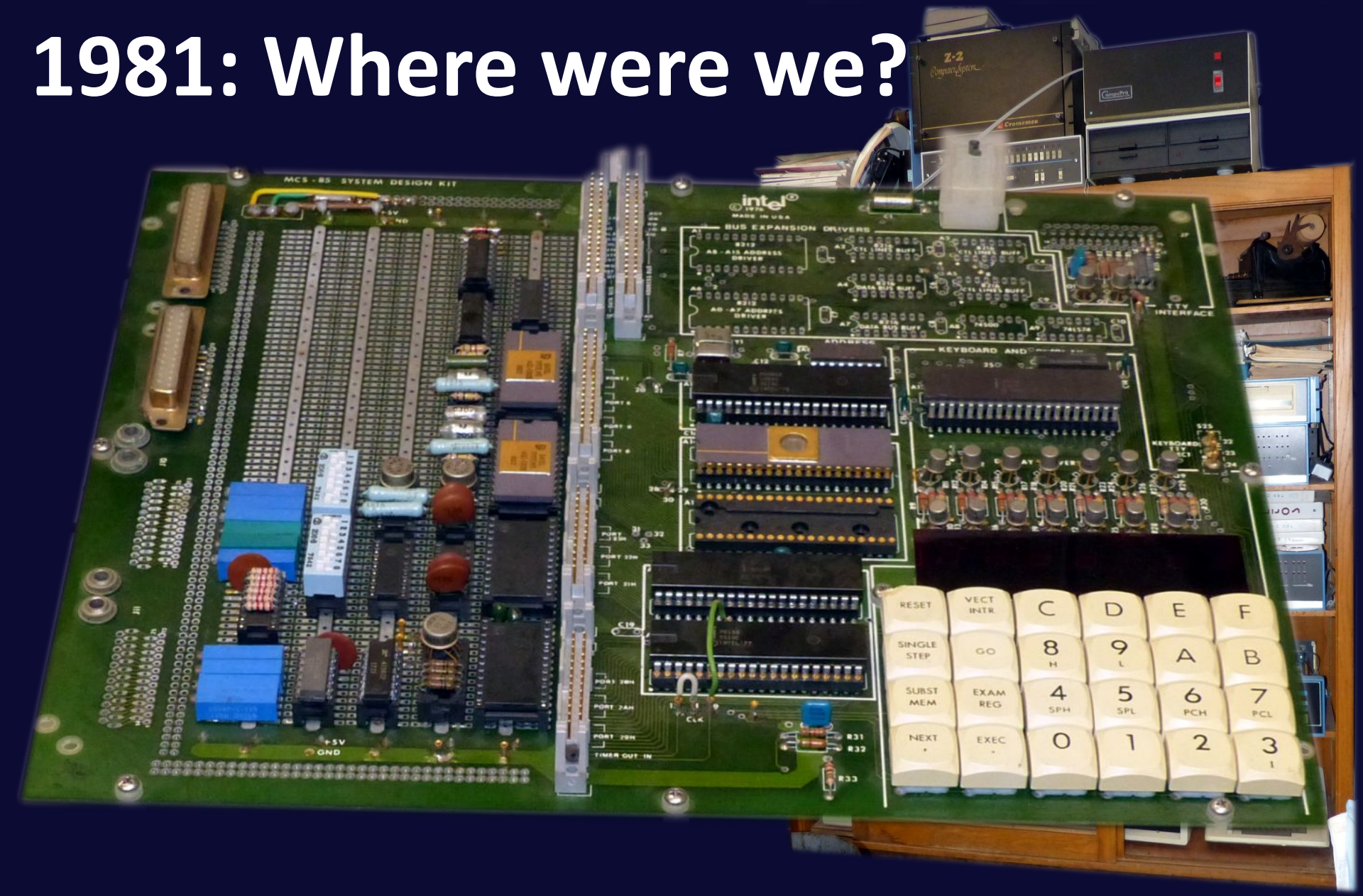
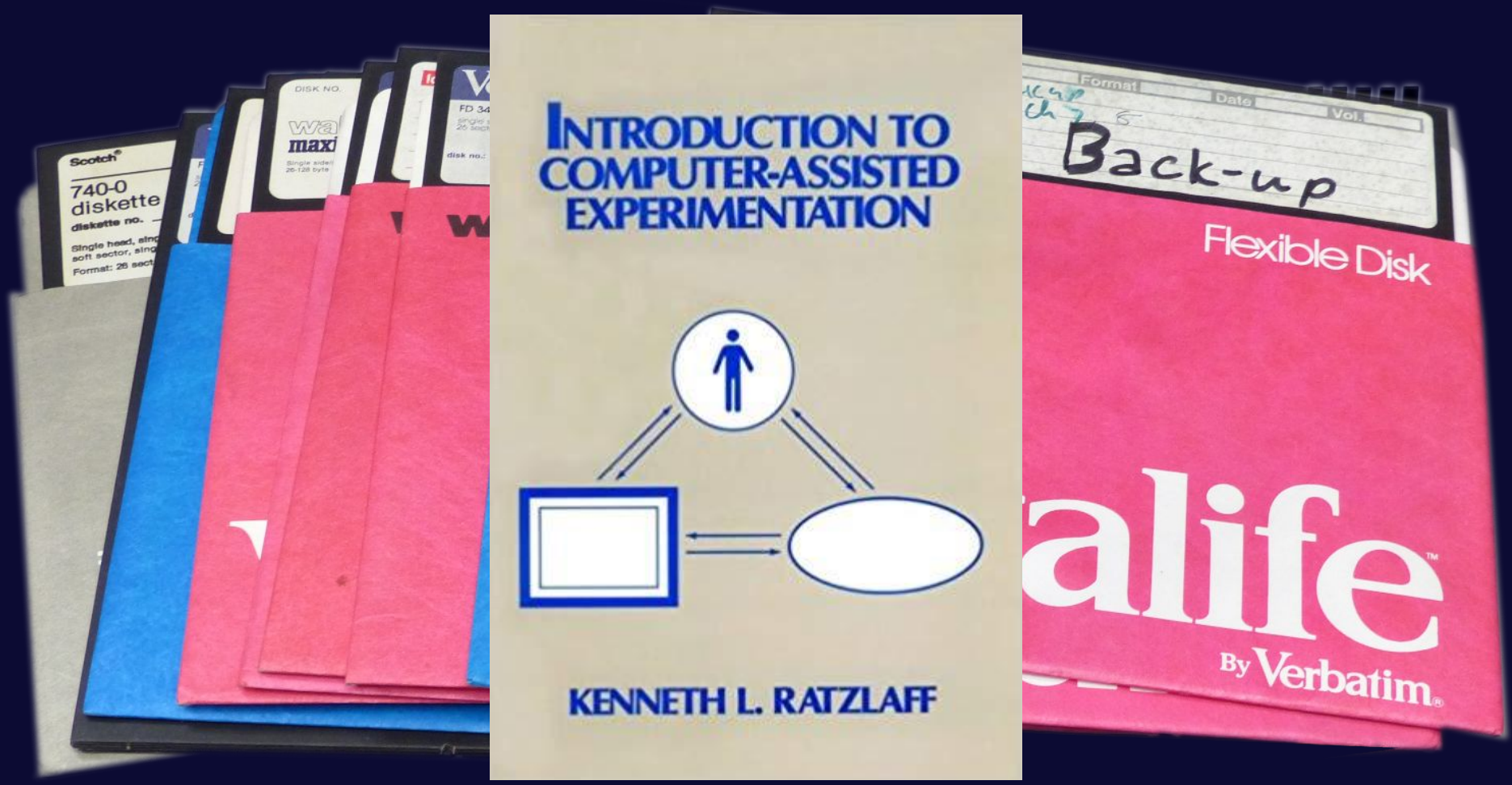
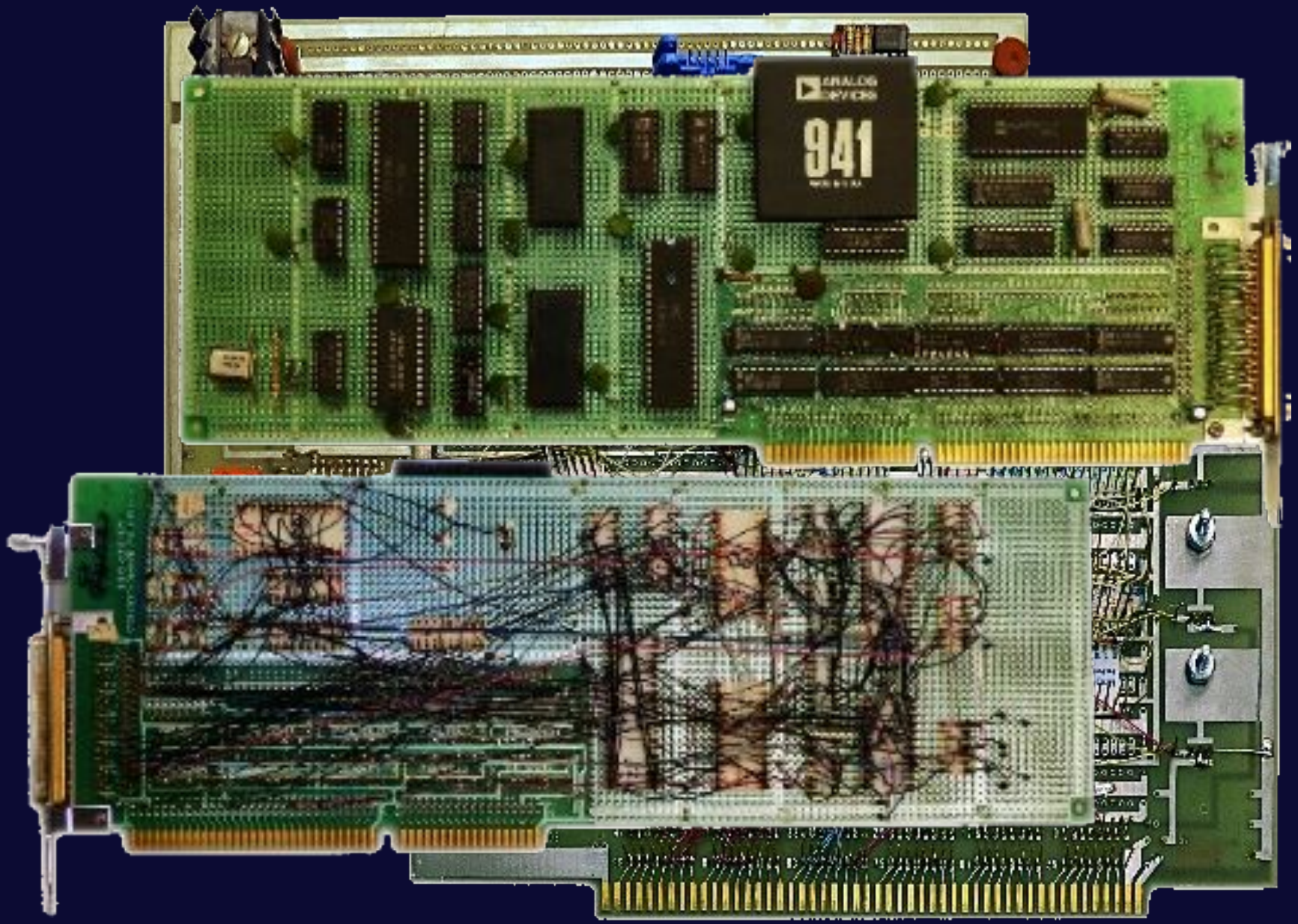
1981: Where were we?







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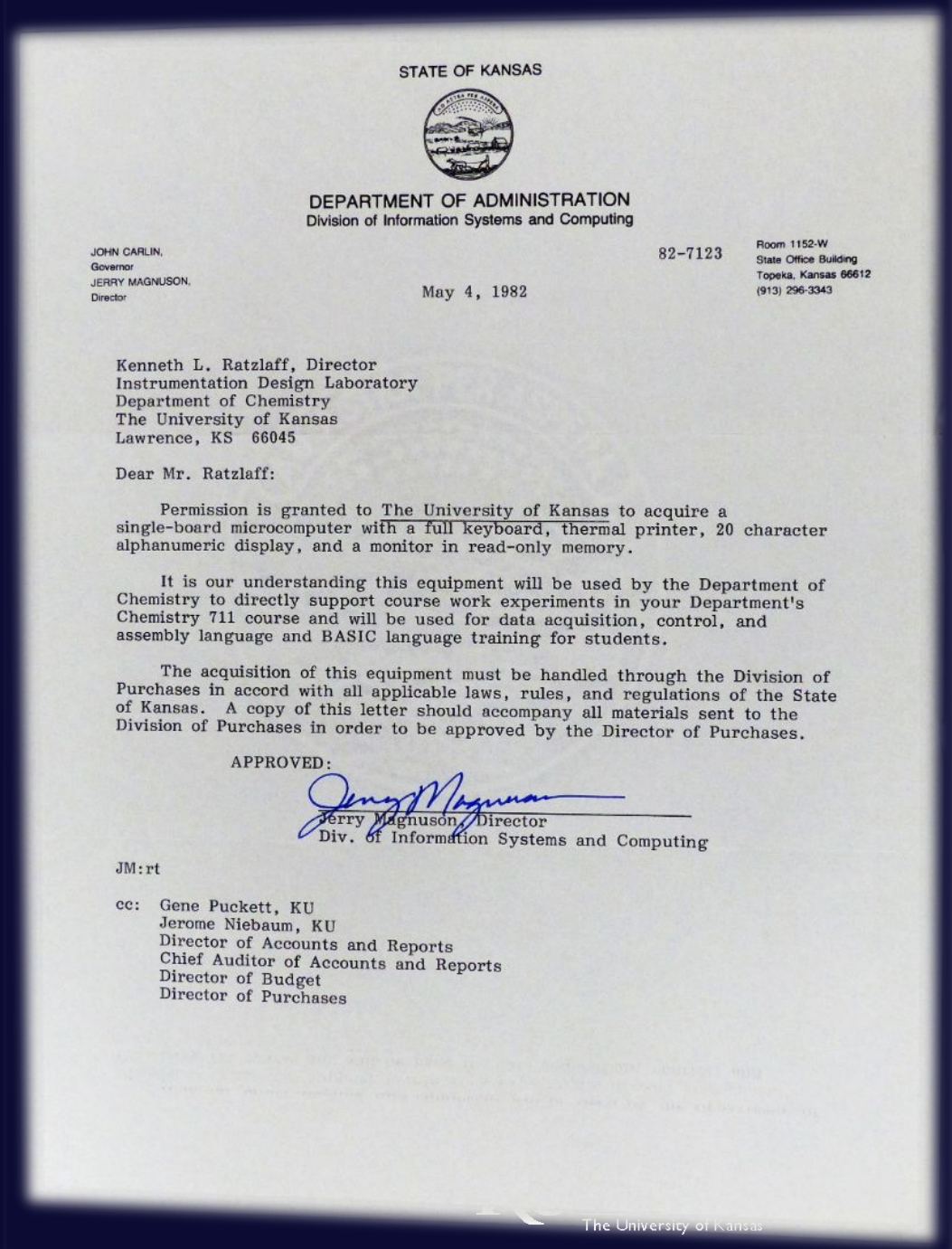
The Real Challenge!

- Needed permission from Topeka for every bit of computer equipment!
- Bidding – everything over $50
- Cables: purchased through some FO office.



STATE OF KANSAS

DEPARTMENT OF ADMINISTRATION
Division of Information Systems and Computing

JOHN CARLIN,
Governor
JERRY MAGNUSON,
Director

82-7123

Room 1152-W
State Office Building
Topeka, Kansas 66612
(913) 296-3343

May 4, 1982

Kenneth L. Ratzlaff, Director
Instrumentation Design Laboratory
Department of Chemistry
The University of Kansas
Lawrence, KS 66045

Dear Mr. Ratzlaff:

Permission is granted to The University of Kansas to acquire a single-board microcomputer with a full keyboard, thermal printer, 20 character alphanumeric display, and a monitor in read-only memory.

It is our understanding this equipment will be used by the Department of Chemistry to directly support course work experiments in your Department's Chemistry 711 course and will be used for data acquisition, control, and assembly language and BASIC language training for students.

The acquisition of this equipment must be handled through the Division of Purchases in accord with all applicable laws, rules, and regulations of the State of Kansas. A copy of this letter should accompany all materials sent to the Division of Purchases in order to be approved by the Director of Purchases.

APPROVED:

Jerry Magnuson, Director
Div. of Information Systems and Computing

JM:rt

cc: Gene Puckett, KU
Jerome Niebaum, KU
Director of Accounts and Reports
Chief Auditor of Accounts and Reports
Director of Budget
Director of Purchases

First orders of business

- Hire a programmer: **Tom Peters**, a veteran of Paul Gilles' lab. Enjoyed programming in C and studying Sabermetrics.

- Look after old projects – brain chemistry and marmots.

- Looking after the burgeoning population of microcomputer users. Tom wrote HawkTalk. We designed printer-sharing devices, greek character capability . . .

Back to Lab electronics & computing

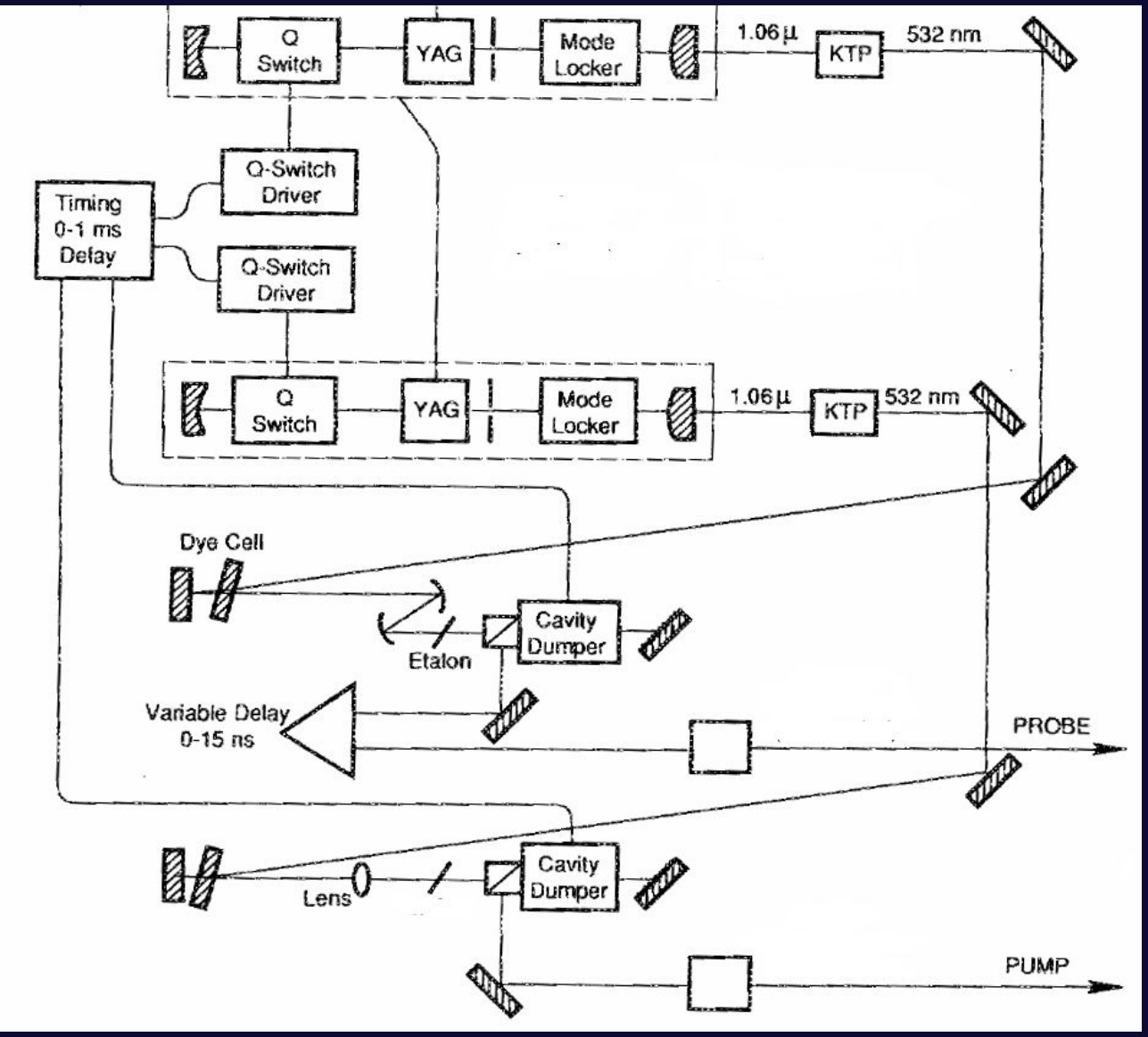
- Build data acquisition capability and then design our "Remote Interface Controller." About 100 Hz with diverse inputs.

- Exercise Physiology Bike – Many digital and analog functions: rate, force, air volume, CO2, O2, heart rate, temperatures . . .

- Chromatography

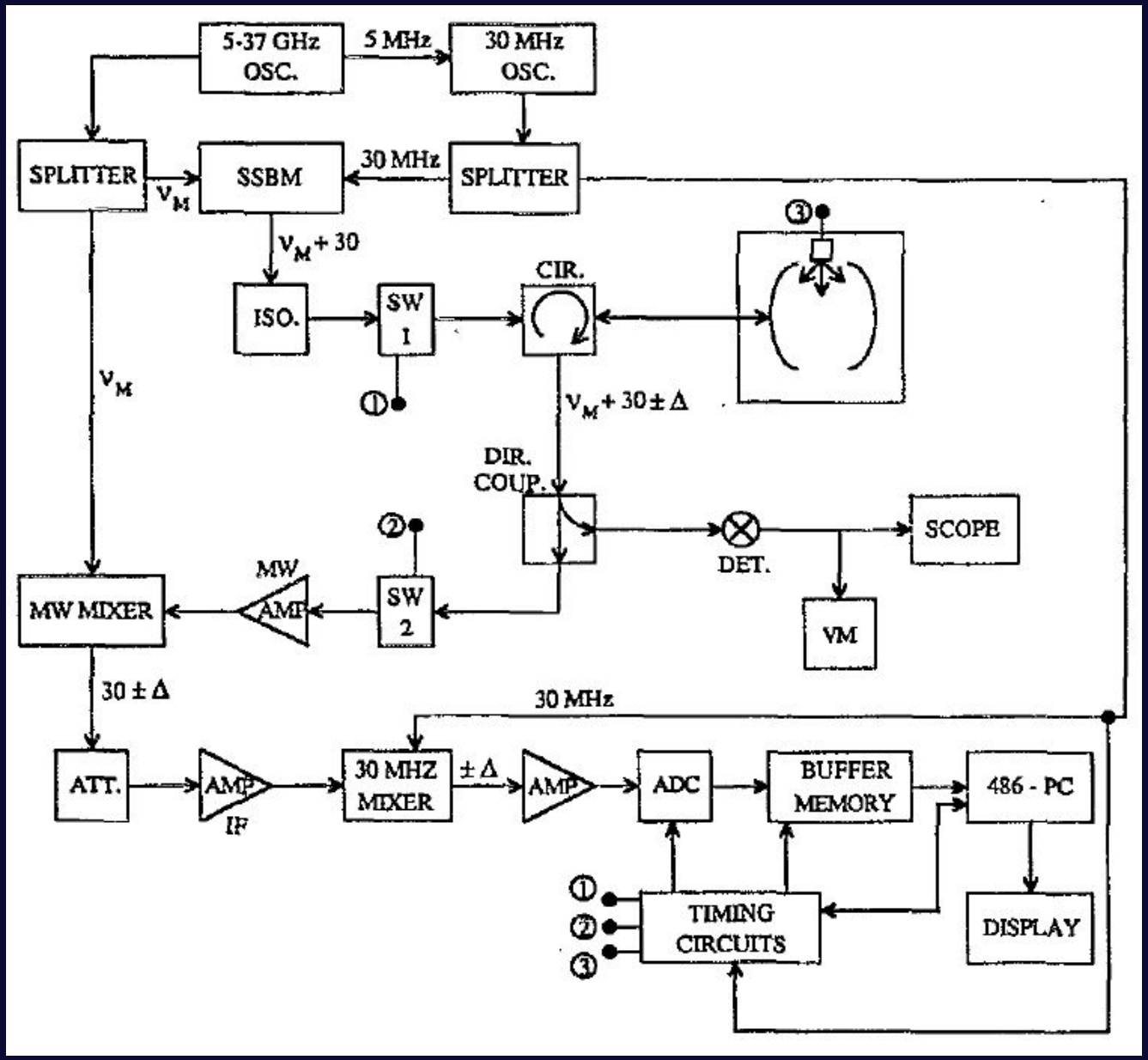
- Craig Martin – Plant Physiology -- connected up ~ 15 different sensors at "slow rate."

New kinds of challenges



Carey Johnson Laser Lab

(1 picosecond = 0.000000000001 second



Fourier Transform Microwave Spectrometer

Marlin Harmony Lab

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Other Evolutions

- Ric Roggero joined as a programmer. Also led us into desktop networking – servers, wiring, etc.
- Tom Peters left for Flint Hills Scientific – Epileptic Seizure analysis.
- Mike Gusick joined us, our first EE.

- Other capabilities “faster, stronger, better.”
  - New languages.
  - New ways to produce circuit boards.
  - USB.
  - Programmable Logic.
  - Single-chip processors – Arduinos, etc.
  - The Raspberry Pi.
  - Windows (“Win-doze”)

- Philosophical Changes in how instrumentation interacts with experiments.

Acceleration measurements on legless lizards with Haskell University.

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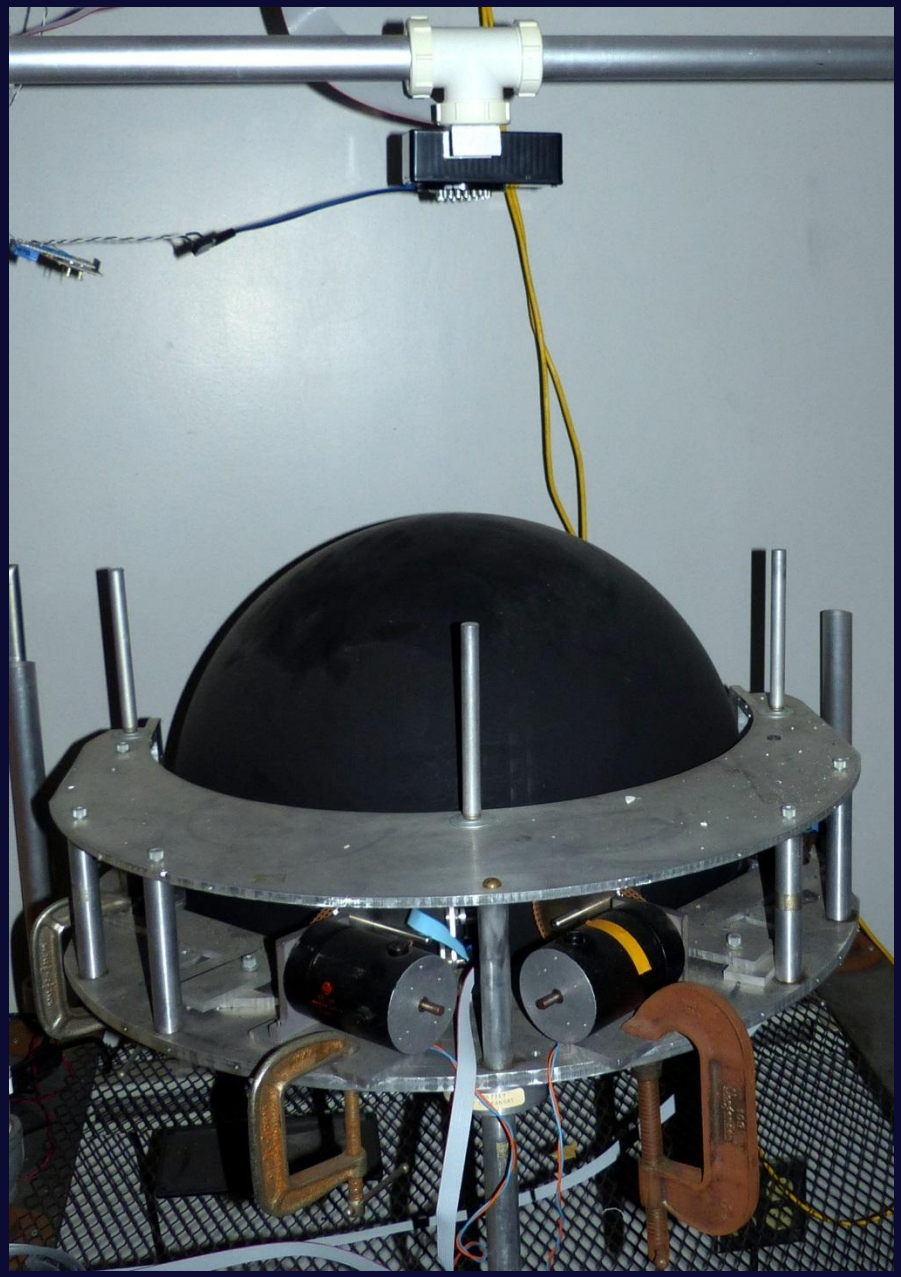
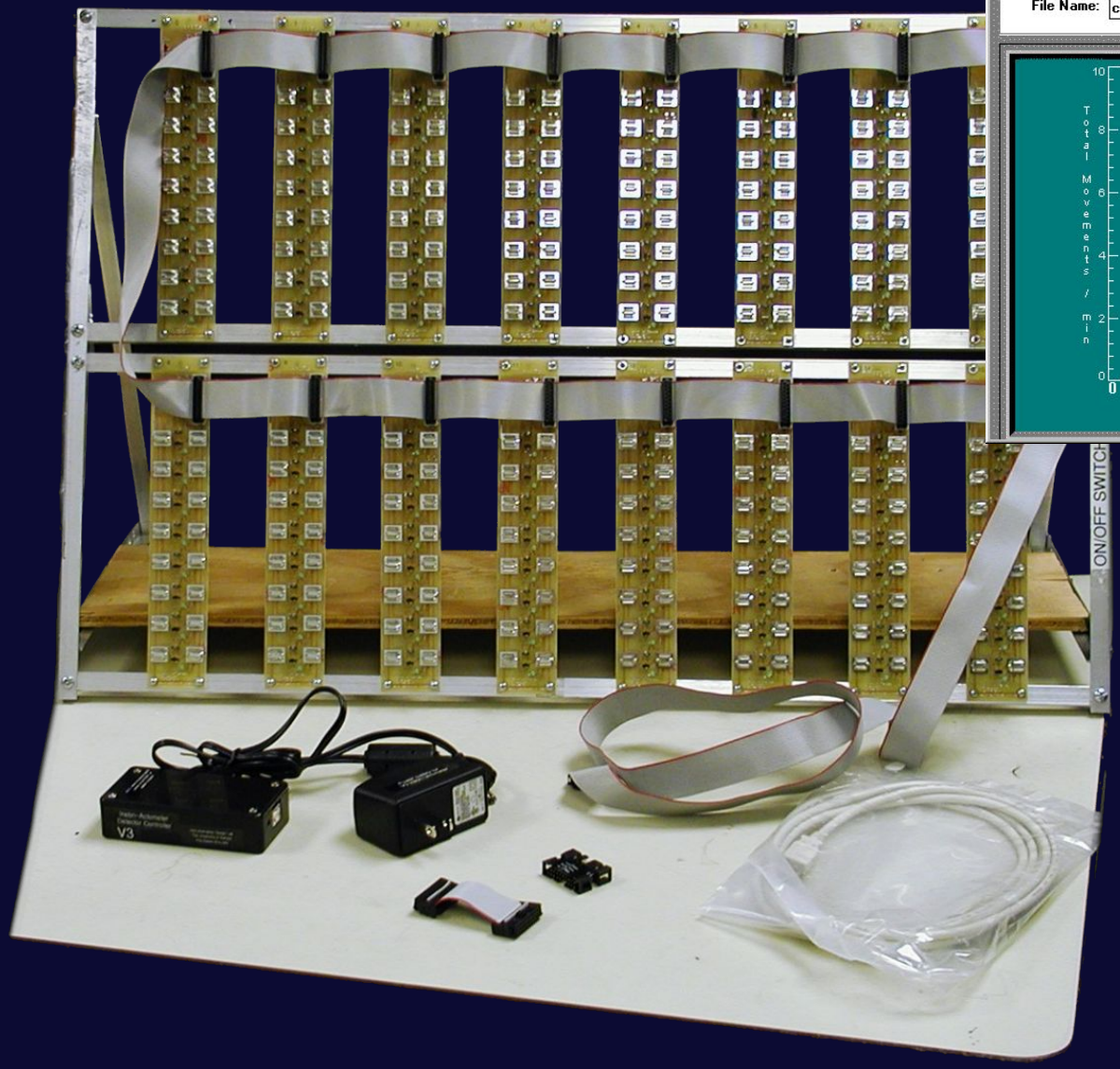
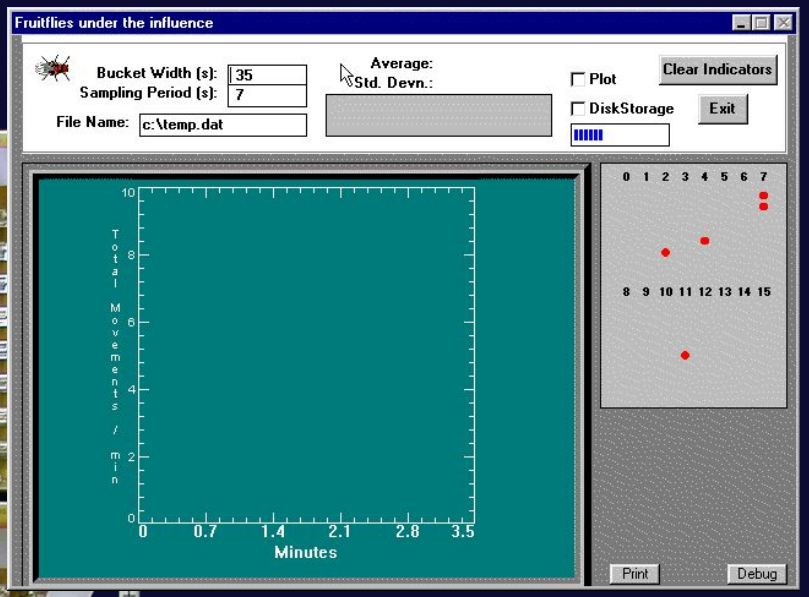


Servosphere: Crickets, moths, cockroaches. (Bill Bell, Mike Greenfield)





Inebri-actometer measures fruitflies getting drunk.

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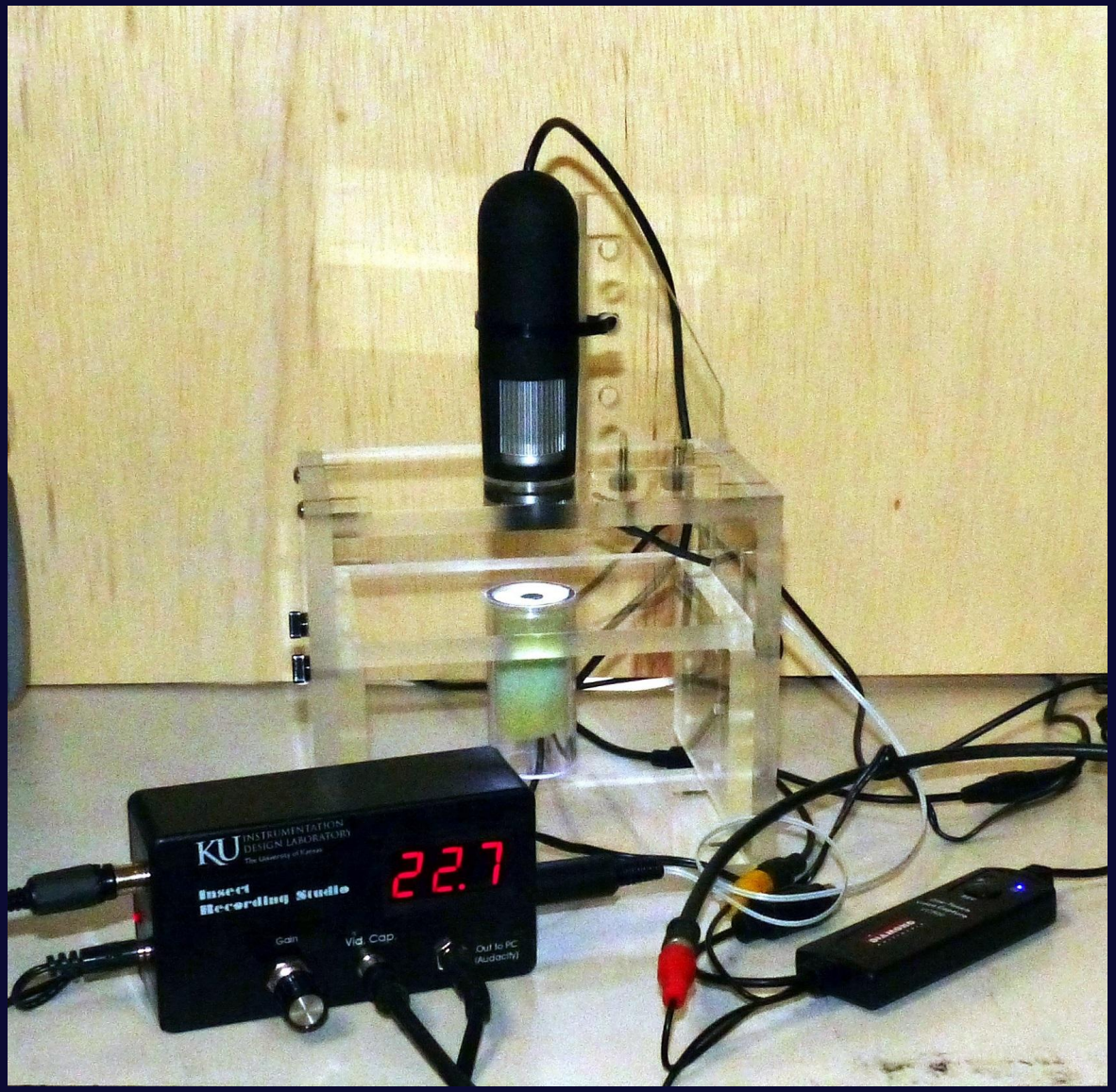

Watch and listen to a pair of horny fruitflies.

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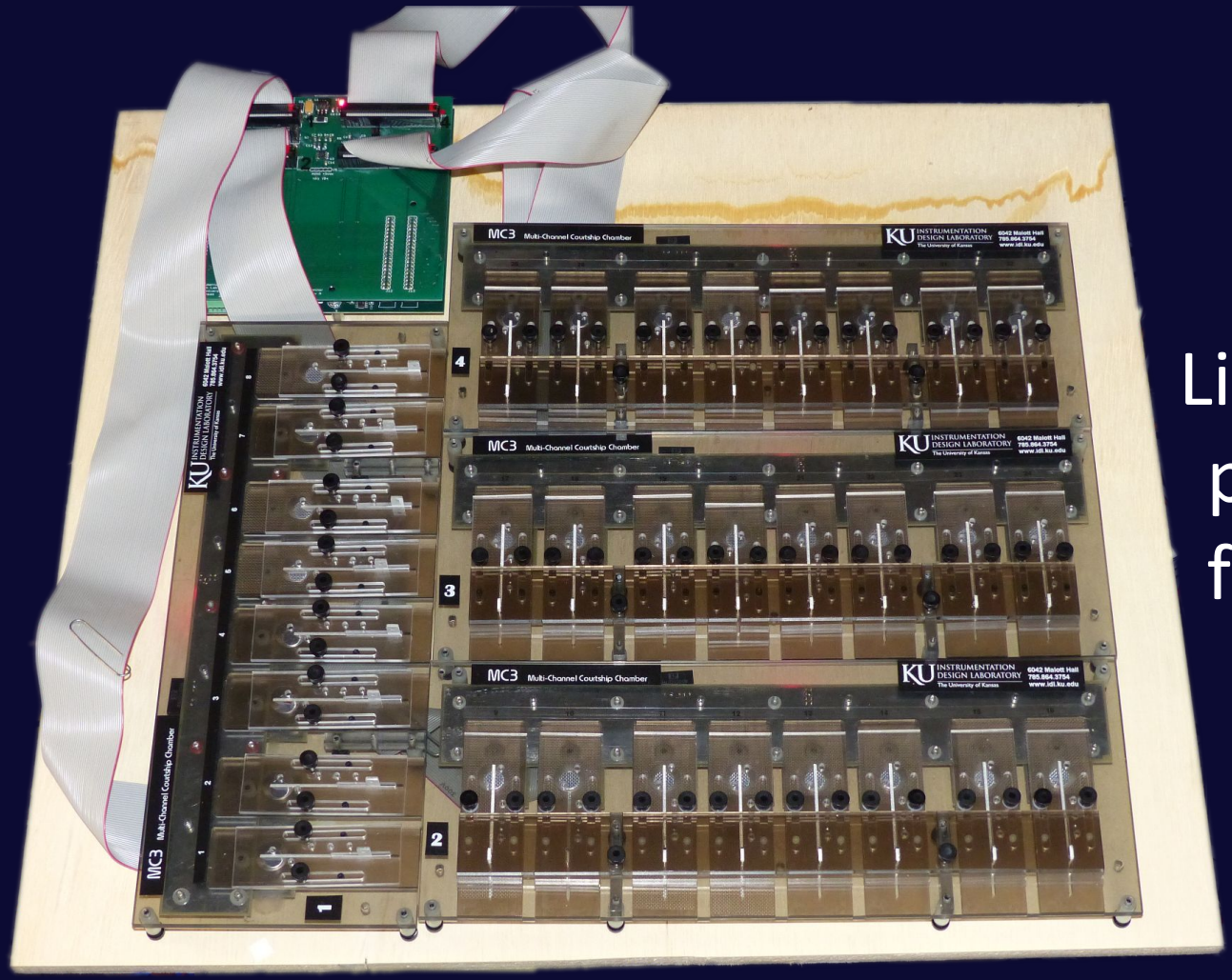

Listen to 32 pairs of horny fruitflies.

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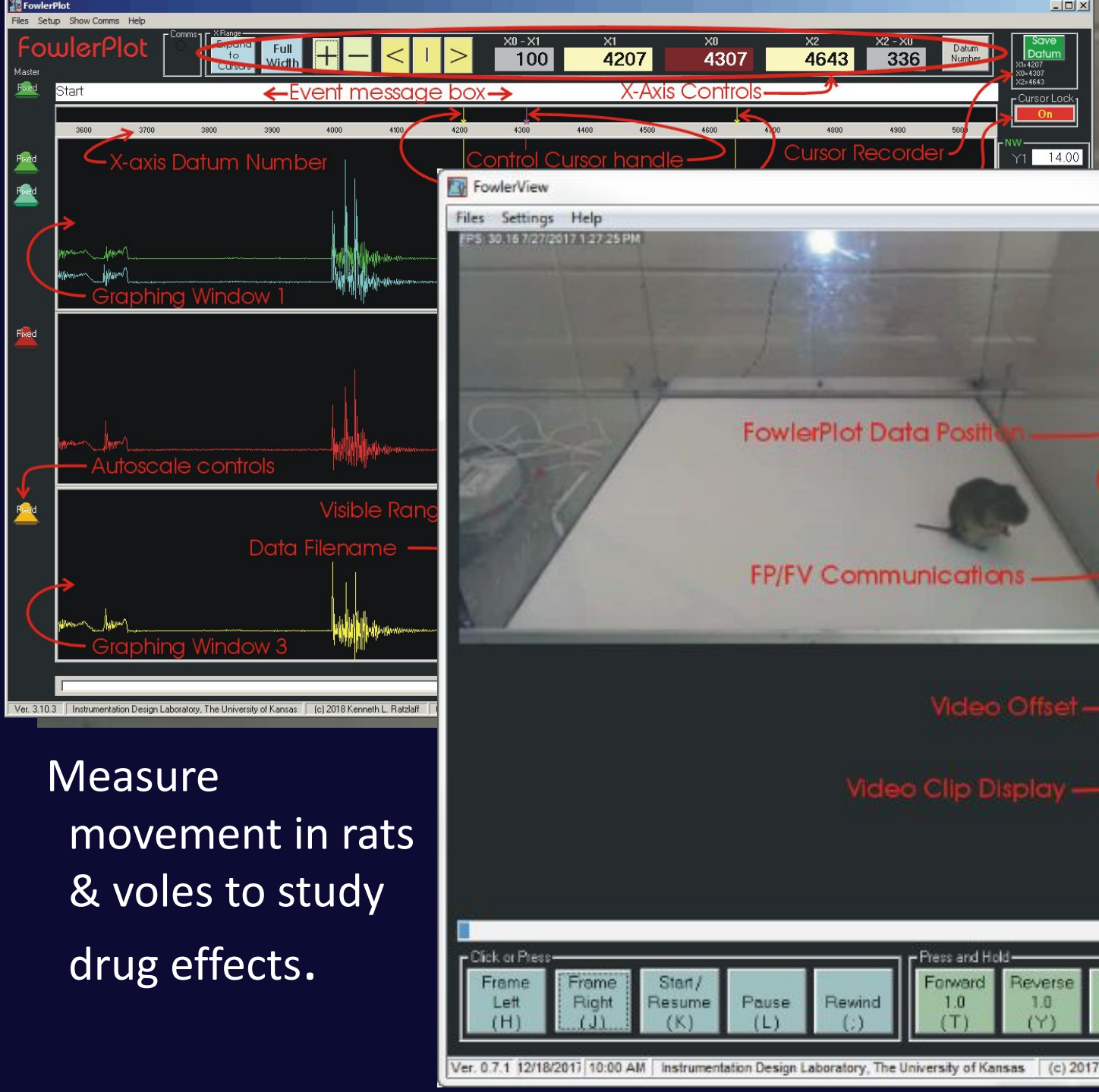
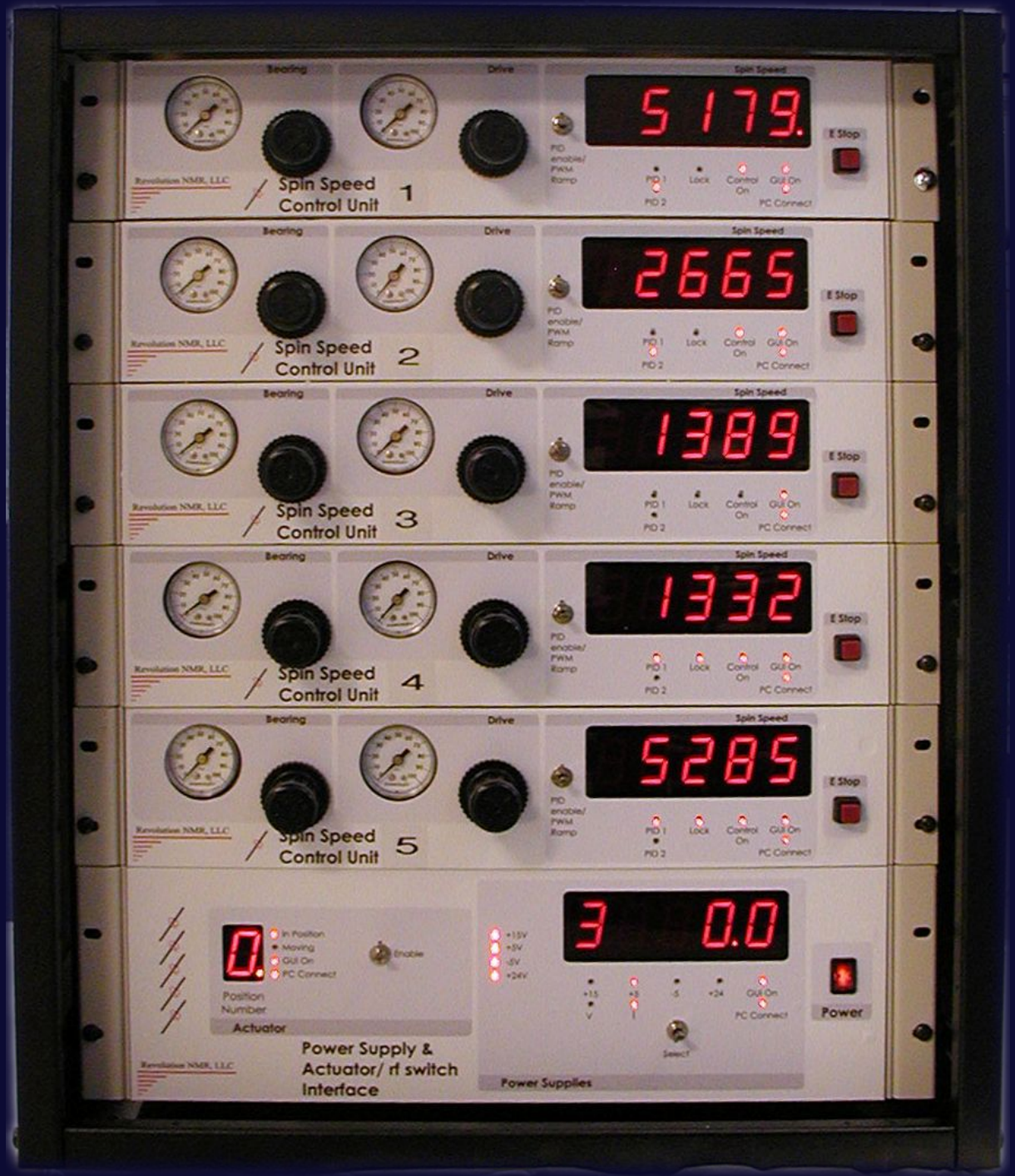
Firefly Simulator

Laurent Buschman, K-State

Now study flash patterns in horny fireflys.



Measure movement in rats & voles to study drug effects.



Eric Munson: Multi-channel Solid-State NMR Spin Controller.

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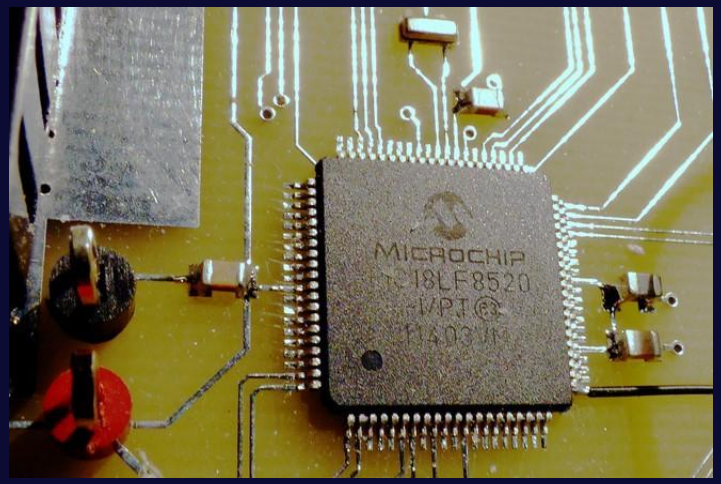
So many projects, so little time



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Radio Ice Cerenkov Experiment

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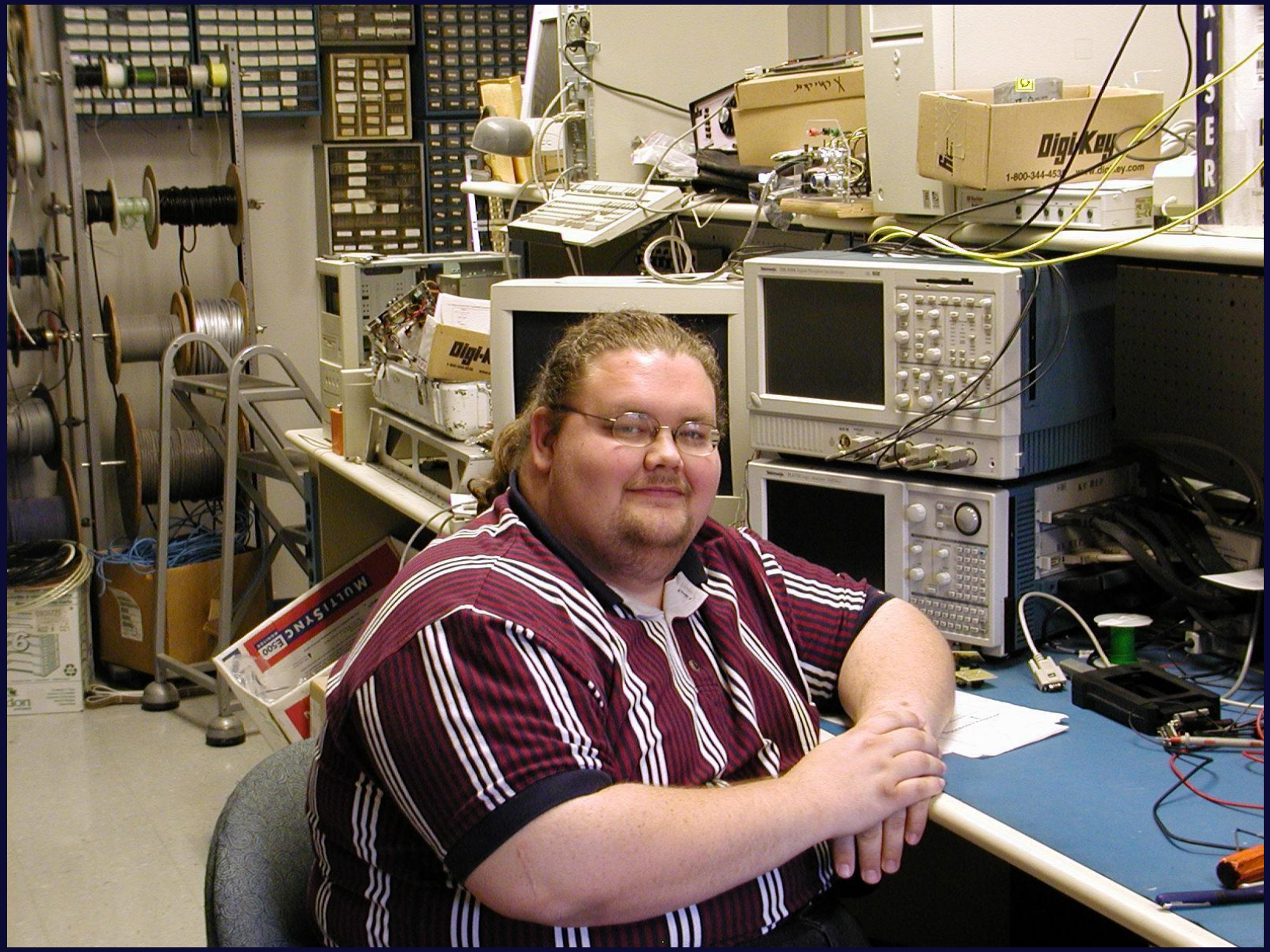

John brought amazing new capabilities to the IDL.

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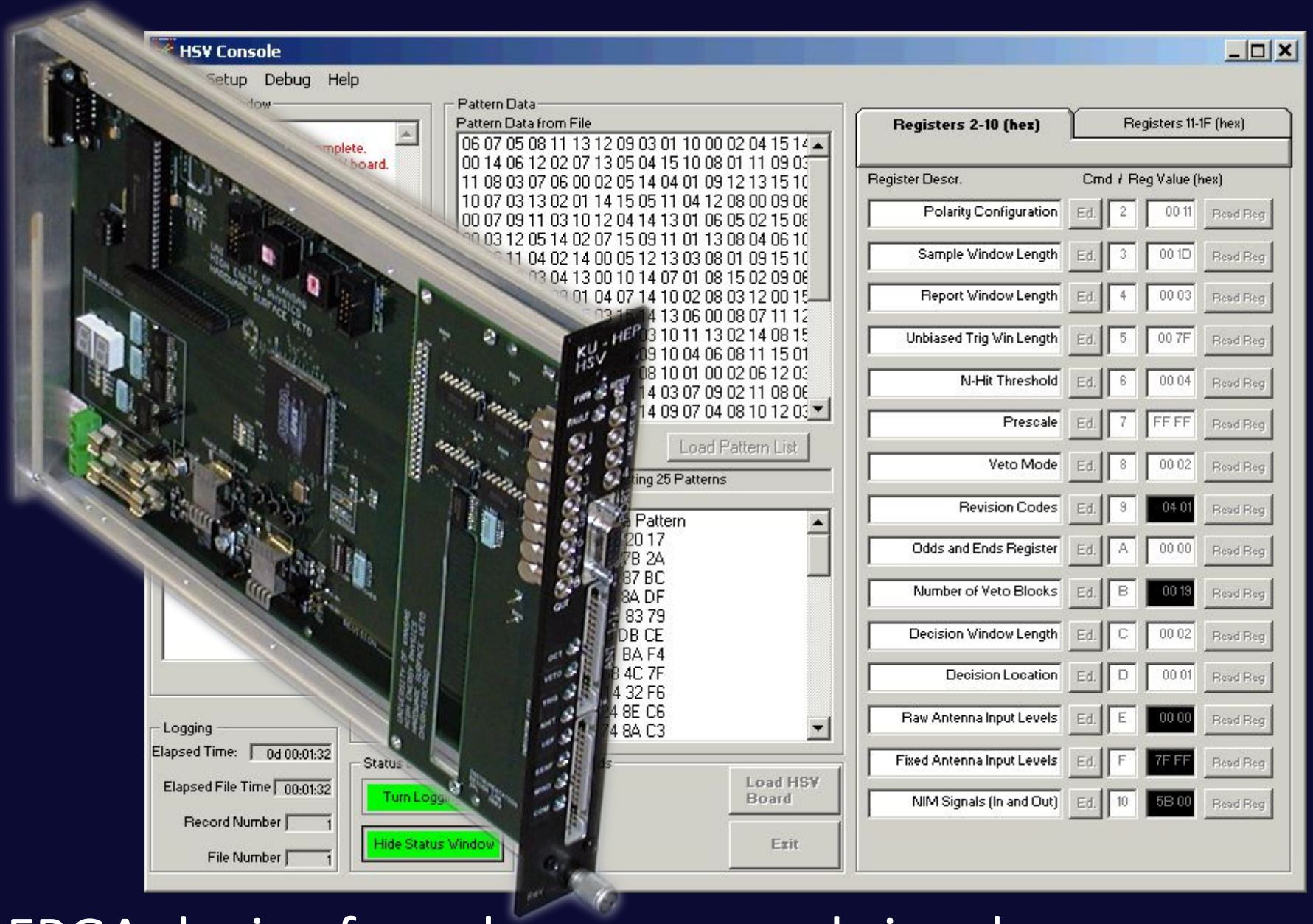

FPGA device for sub-nanosecond signal analysis.

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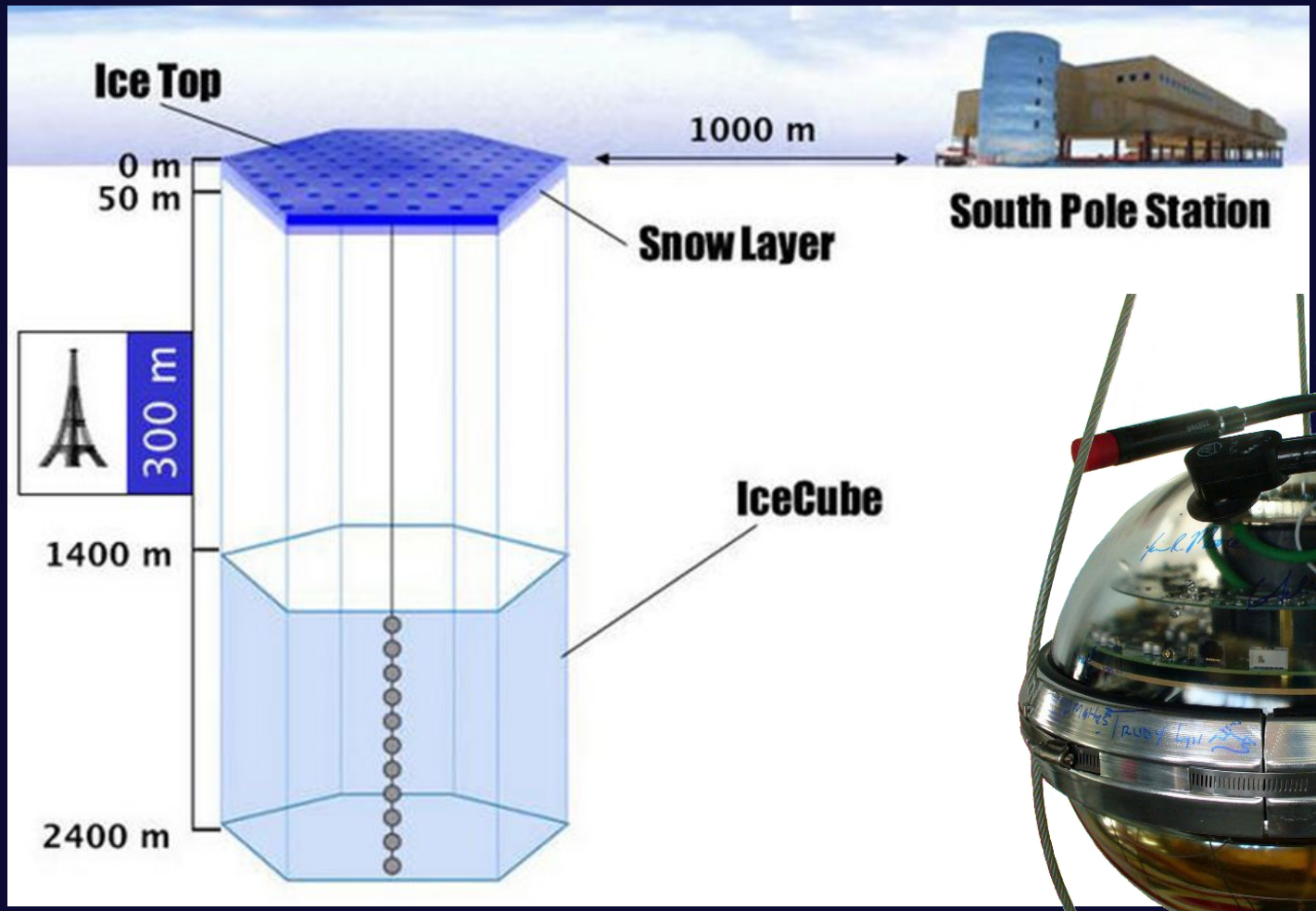
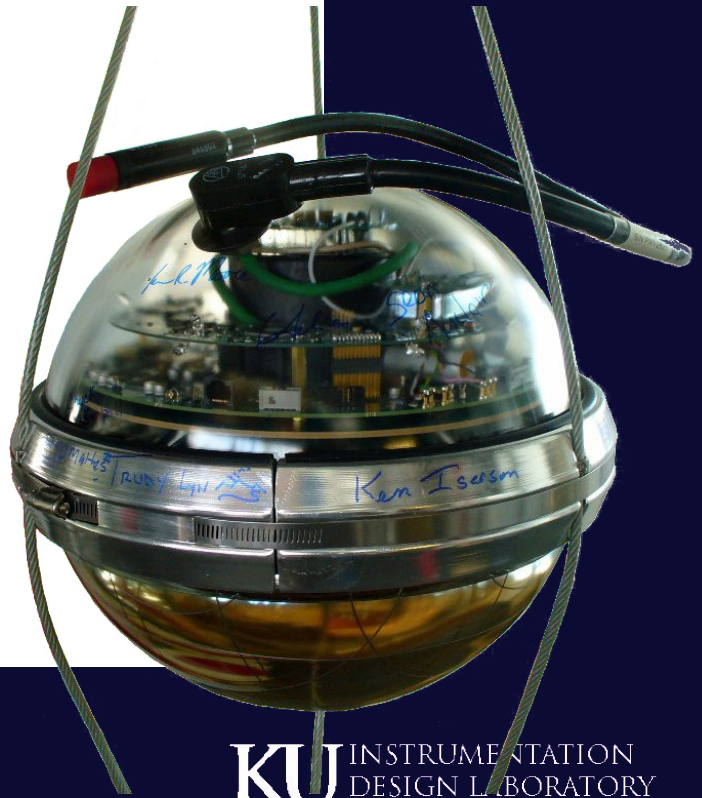
Collaboration with the IceCube Experiment





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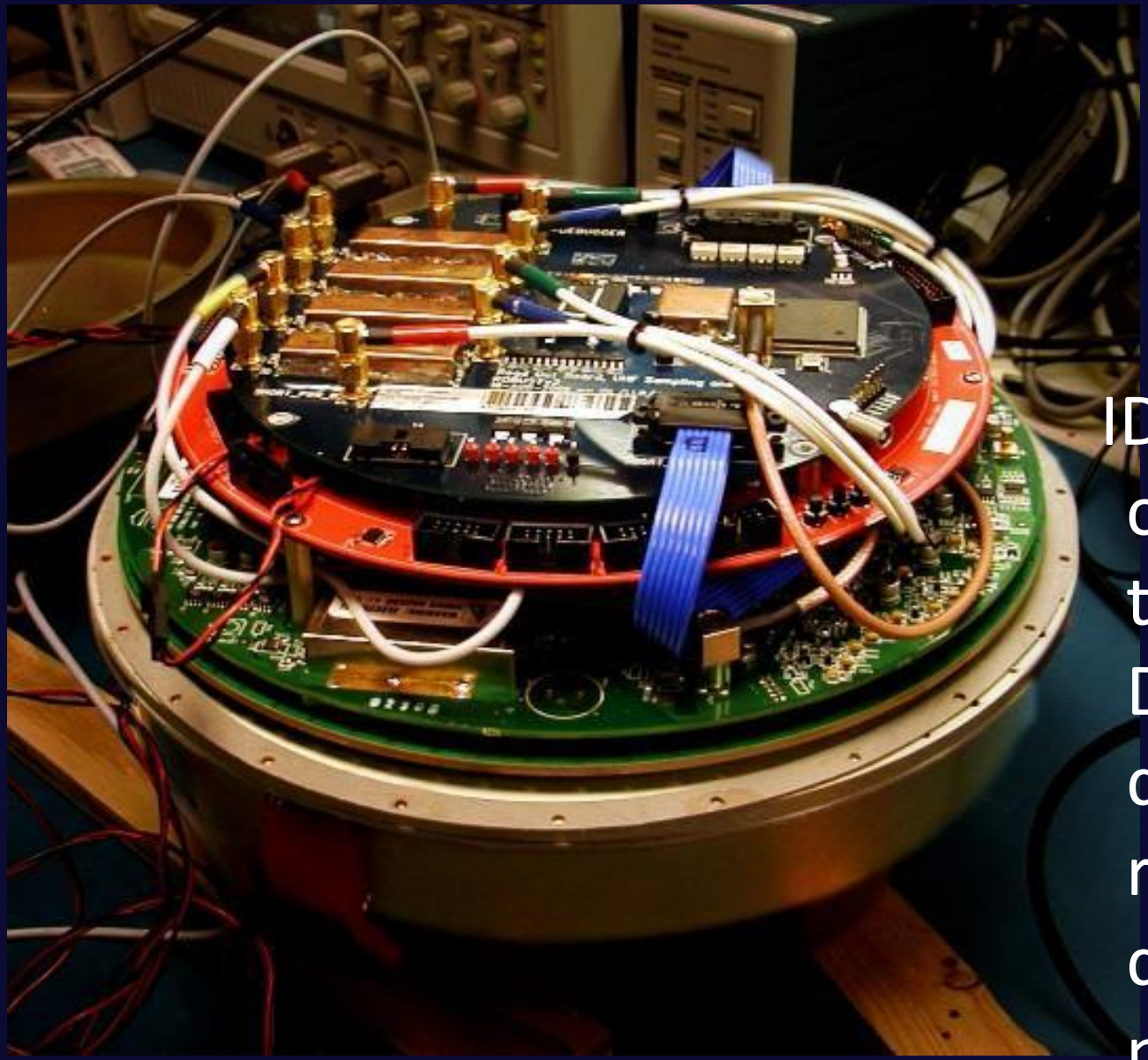

IDL collaborated to develop the DRM, a new detector for radio detection of neutrinos.

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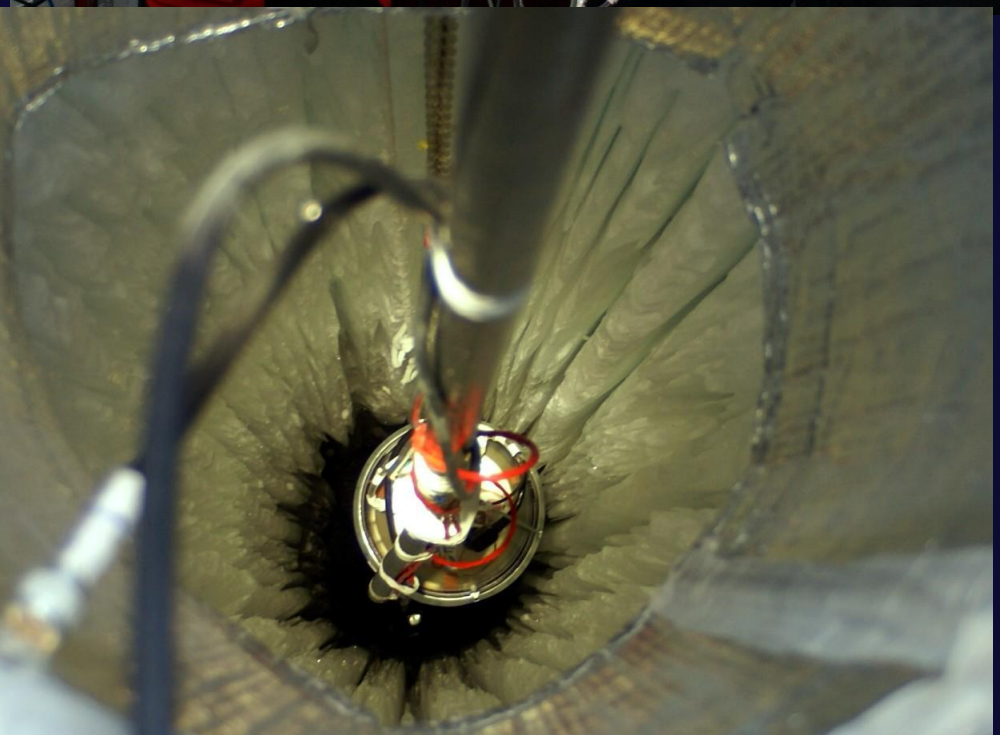

DRMs are deployed over 1400m deep in the Antarctic ice.

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Rob Young, Senior Design Engineer

Rob also has amazing FPGA and device development skills.

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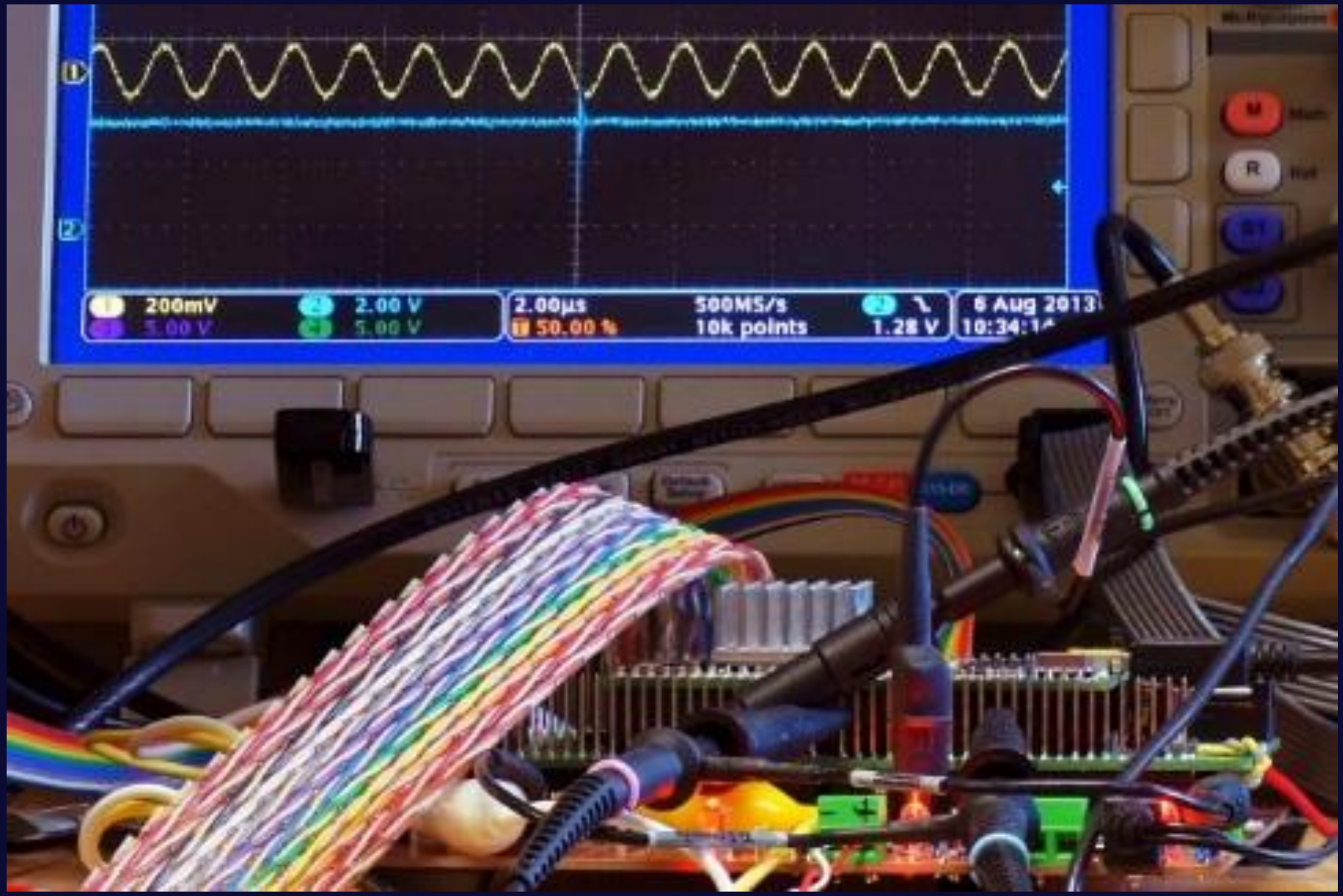
Other AstroParticle Projects



Chris Allen and Lei Shi (EECS)

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Christian Hornhuber, Engineer

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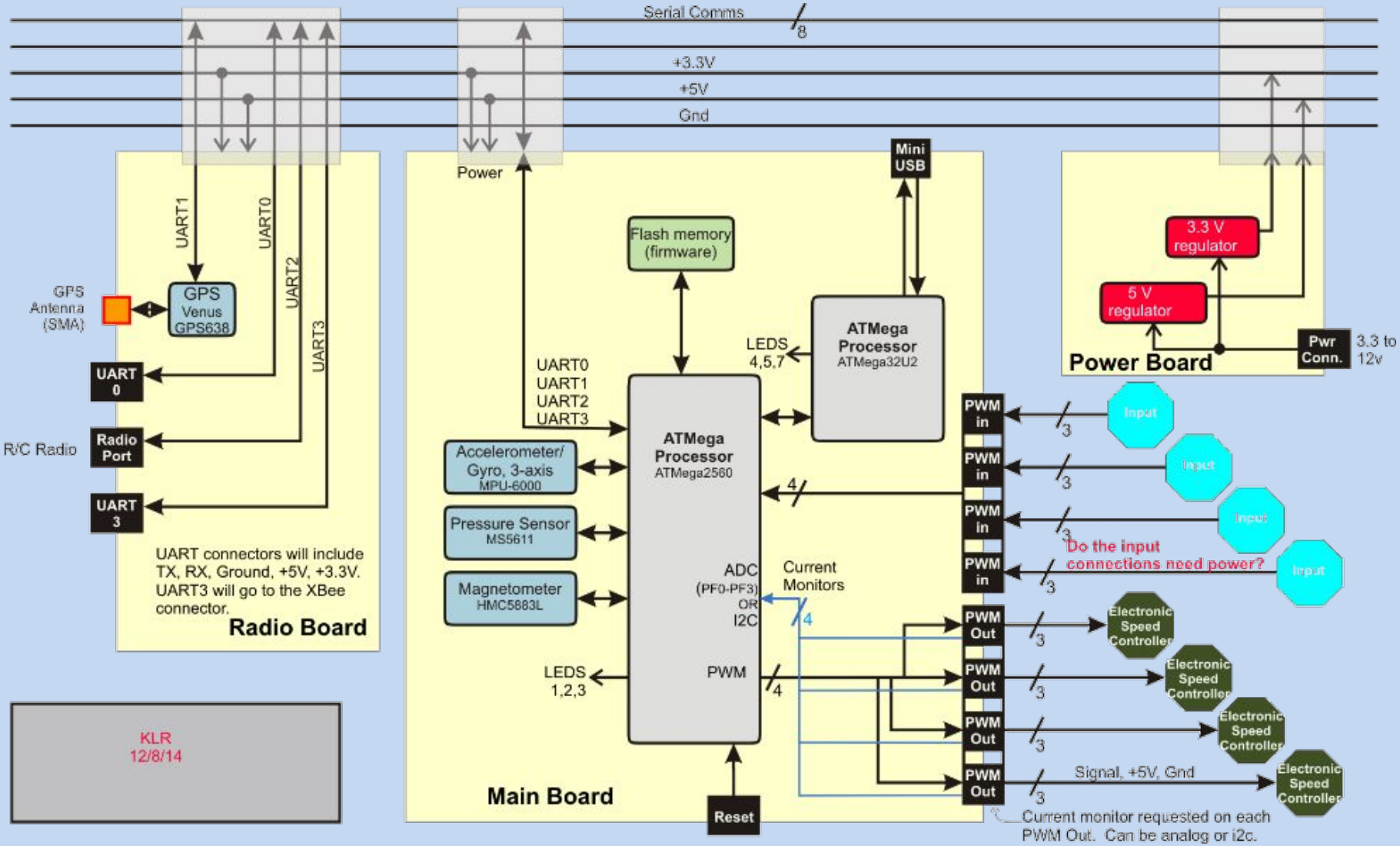
Autopilots



Instrumenting a Red Bull plane to study pilot actions.

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It’s been a great ride!

Thanks to all the great staff members of the IDL, to our collaborators at KU and around the world, to the people who provided support, and to those administrators who stayed out of the way.

And to friends and family.